FLIGHT

First Aero Weekly in the World.

Founder and Editor: STANLEY SPOONER.

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport.

OFFICIAL ORGAN OF THE ROYAL AERO CLUB OF THE UNITED KINGDOM.

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CONTENTS.

With regard to photographs and descriptions of new British machines and those of our Allies, and other information which may be of help to our enemies, it should be noted that the Editor of FLIGHT, *in the National interest, submits all matter of this character to the Official Press Censor before publication. Hence our readers will appreciate that many new departures in construction or advances in detail work are necessarily held back for the present rather than the smallest risk should be run of helping those who are so strenuously fighting the Allies for the enforcement of their "Kultured" militarism.*—ED.

EDITORIAL COMMENT.

Zeppelins and their Limitations.

The wreck off the Danish coast of L3 and L4, the giant dirigibles of the German Navy, once more invites attention to the disadvantages (at this stage of airship development) of these unwieldy craft, and the risks run when they venture far from their harbours. We have never been supporters of the huge rigid airships of the Zeppelin type as fighting units, for the very reasons which experience has again shown to have been well founded. These recent disasters have served to emphasise the fact that the defects are not inherent in the Zeppelin system only, for while L3 was one of Count Zeppelin's latest creations, L4 was of the Schutte-Lanz type. Even for scouting expeditions, the disadvantages of these mammoths far outweigh the advantages, although with good luck they, as occasion arises, may be serviceable for such bomb-dropping adventures as those over Norfolk, Warsaw, Antwerp, Calais, &c., although the risks run even in these, if carried out in daylight, are far beyond any possible advantages to be gained, while essays of this sort from a military standpoint have no value whatever. Such reconnaissance work as the Zeppelins have done could have been performed equally well, if not better—as nothing like the same risks would attach—and much more economically by the smaller airships of the semi-rigid or non-rigid types, the construction of which we have in the past advocated. In support of this, although little has been heard publicly of the work carried out by the airships belonging to the French Army, there is ample information available to show that these have rendered most valuable assistance since the commencement of the war, and have proved their utility and manageability in many ways, and under the most adverse weather conditions. In our own sphere, even the small airship fleet of Great Britain has rendered extraordinary services, particularly in support of our naval operations, and although they have had to encounter extremely trying weather, with winds up to 40 and 45 miles an hour, and have been away from their base for many days at a stretch, we believe that they, like the French craft, have come through their work unscathed.

It is unfortunate that in some quarters, which were not long ago loud in propagating scare ideas as to the powers for "frightfulness" of the German Zeppelins—was this campaign inspired by the insurance under-writers' ring?—there has been since the wreck of the two giant dirigibles a tendency to condemn the airship in any form. This is utterly unwarranted, as we have always maintained. Although the development of the large dirigible is likely to be slow and must take years to effect, there is no doubt as to a definite sphere of work at the present time for craft of the lighter-than-air type, and we look forward to the time, and that in the immediate future we hope, when our own fleet of scouting airships will be considerably augmented and amplified, so that it will become a very important branch of the Royal Naval Air Service—a position which the work already accomplished by our small airships has shown that it deserves.

* * *

The Essex Air Raid. Spies again Reported.

Having in mind that the statements made on the occasion of the enemy's aerial raid of Norfolk as to the presence on the roads of cars bearing powerful lights, which acted as guides to the pilots of the hostile aircraft, have been officially brushed aside as having no

foundation in fact, it is a remarkable coincidence—if nothing more—that no sooner has the aeroplane raid of Essex taken place than assertion is forthcoming of the similar presence of spy-driven cars in Essex. The informant in this case is Mr. James H. Millard, of Coggeshall, who in the course of a letter to the press writes as follows :—

"I was returning from the village of Bradwell, accompanied by two members of the 5th Royal Warwicks. At 8.20 I sighted an aeroplane bearing south-west by west. After some manœuvring it moved rapidly to the westwards. Ten minutes after we located it again due north, and after a little more manœuvring it started at a very rapid pace due east towards Colchester, passing over Coggeshall. At 8.40 I saw a bomb drop from the aeroplane.

"I have a very firm conviction that a motor car, bearing two very large and bright headlights, had something to do with the movement of the aeroplane. In my judgment, it was leading the aircraft from south to east along the main Colchester road, but the car, instead of keeping straight on, turned westward under Kelvedon Bridge, pursuing a course west by north into Coggeshall, and when the motor car arrived in Coggeshall, it went through the town eastward at a very high rate of speed. At that particular time the aeroplane seems to have altered its course and gone eastward, presumably according to the signals from the motor car."

Mr. Millard, by way of a check upon these enemy methods, asks whether "all motor-cars ought not to be stopped after dusk. I am further of opinion that at every point on the main London and Colchester road where two roads converge there ought to be military sentries, and every motor-car ought to be stopped."

We have already in the past expressed the opinion that the idea of barriers at night is one that should be put into practice on every road, including certain cross-roads of main importance in the whole of the sections of the coasts likely to be selected for further visits by our hostile aircraft. By means of the barrier system, every driver would be able to prove his *bona fides* whenever he passed in or out of the prescribed area, and it would not be long before every car and its occupants, regular and otherwise, would be tabulated. We feel that no car-owner or driver would resent any steps of this kind that may be considered necessary, not only to remove the suspicion under which he, with others, is suffering, but also from the point of view of the country's safety to run the offender or offenders to earth. The inconvenience would be but slight, as most of the local owners would be well known, so that, in their case, the passing of the barriers would be a rapid, although necessary, formality.

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AIRCRAFT WORK AT THE FRONT.

OFFICIAL INFORMATION.

In the bi-weekly despatch of Sir John French, issued on the 25th ult., there was the following :—

"In spite of the bad weather, however, our aircraft have carried out their duties, and co-operation between aviators and artillery has been particularly close."

In the despatch, dated February 23rd, from an "Eye-Witness" present with the British General Headquarters, issued on the 26th ult., there was the following :—

"Several villages in the centre were heavily shelled during the day (19th), but in the afternoon the German guns ceased firing owing to the fear of revealing their positions to our aviators, who kept the whole hostile line under observation."

In the announcement regarding the operations in the Dardanelles, issued by the Admiralty on Monday evening, it was stated :—

"The operations in the Dardanelles are again delayed by unfavourable weather. A strong north-easterly gale is blowing, with rain and mist, which would render long-range fire and aeroplane observation difficult."

In the report of Vice-Admiral Sir David Beatty on the North Sea action on January 24th, issued on the 2nd inst., there was the following :—

"I boarded and hoisted my flag in 'Princess Royal' at about 12.20 p.m., when Captain Brock acquainted me of what had occurred since the 'Lion' fell out of the line, namely, that 'Blücher' had been sunk, and that the enemy battle cruisers had continued their course to the eastward in a considerably damaged condition. He also informed me that a Zeppelin and a seaplane had endeavoured to drop bombs on the vessels which went to the rescue of the survivors of 'Blücher.'"

In the official *communique* issued in Paris on the afternoon of the 25th ult., there was the following :—

"Our aviators threw sixty bombs on the enemy's stations, trains, and concentrations. It was possible to follow the results of this bombardment, which was extremely effective."

An official note issued in Paris on Saturday stated :—

"German aeroplanes dropped bombs on the Belgian coast behind Nieuport, killing a woman and an old man. In the Woevre a German aviator who attempted to pass over our lines was driven back by our fire.

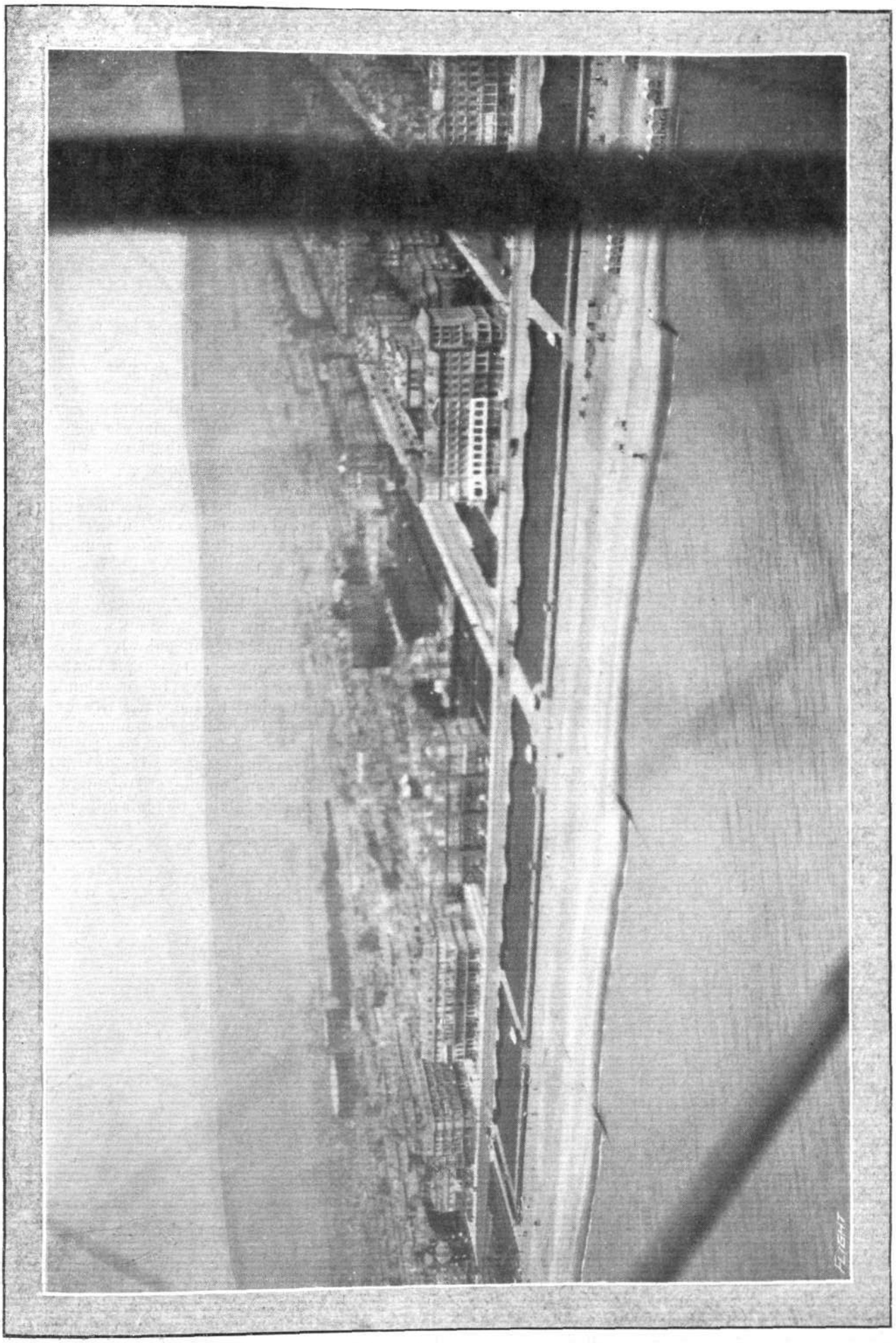
"A French airman succeeded in dropping three bombs on the barracks at Metz, near the esplanade."

The following official note was issued in Paris on Tuesday last :—

"For the past ten days actions which have been favourable for our arms have been proceeding at different points of the Front. Aeroplanes and airships have almost constantly taken part in these, and have once more proved the remarkable efficiency of their employment for military purposes.

"As an instance of aerial methods and results, it is sufficient to mention the location on February 17th, by a single aviator, of 21 enemy batteries, and the discovery on February 18th of a heavy battery, which was immediately followed by an effective fire, exploding ammunition wagons. We may also recall the bombardment carried out on February 19th, 24th and 25th for the purpose of impeding the working of a railway by the enemy, and the flight during the night which enabled one of our airmen to bombard the Barracks at Metz.

"It is to be noted that during this period, the enemy's aviators have shown very little activity. The German aeroplanes make for their lines immediately they are chased. The great losses suffered by the German aviation department during the previous month seem to have made them very cautious. As for the Zeppelins, their action remains absolutely negative. As the result of the recent disaster to the dirigibles 'L 3' and 'L 4,' Germany has lost all the naval type of airships which she possessed before the war. It may be recalled that 'L 1' disappeared in a storm on September 9th last, and that 'L 2' was destroyed by fire on October 17th."

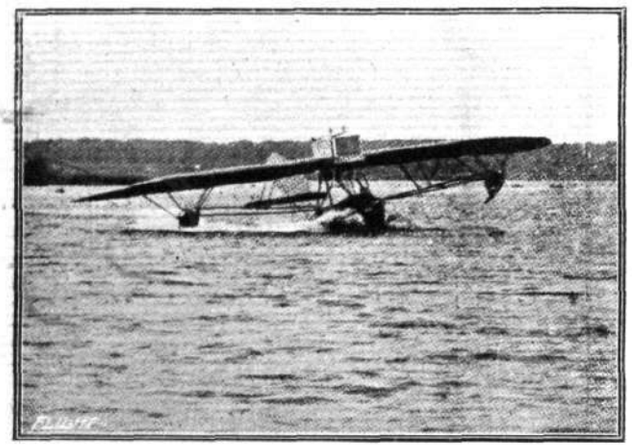


FROM ABOVE.—The Lawns, Hove, from the snap taken by Mr. Clarence Winchester from Mr. Eric Pashley's biplane last year.

THE A.E.G. MONOPLANE FLYING BOAT.

IN our issue of September last and following issues we gave a series of illustrated descriptions of various German seaplanes, among which was, it may be remembered, the A.E.G. tractor seaplane. Particulars are now to hand of a monoplane flying boat built by the same firm and entered for the Warnemünde Scandinavia Seaplane Race, which was postponed on account of the war.

The aeroplane portion of the A.E.G. flying boat consists, as will be seen from our illustration, of a pair of

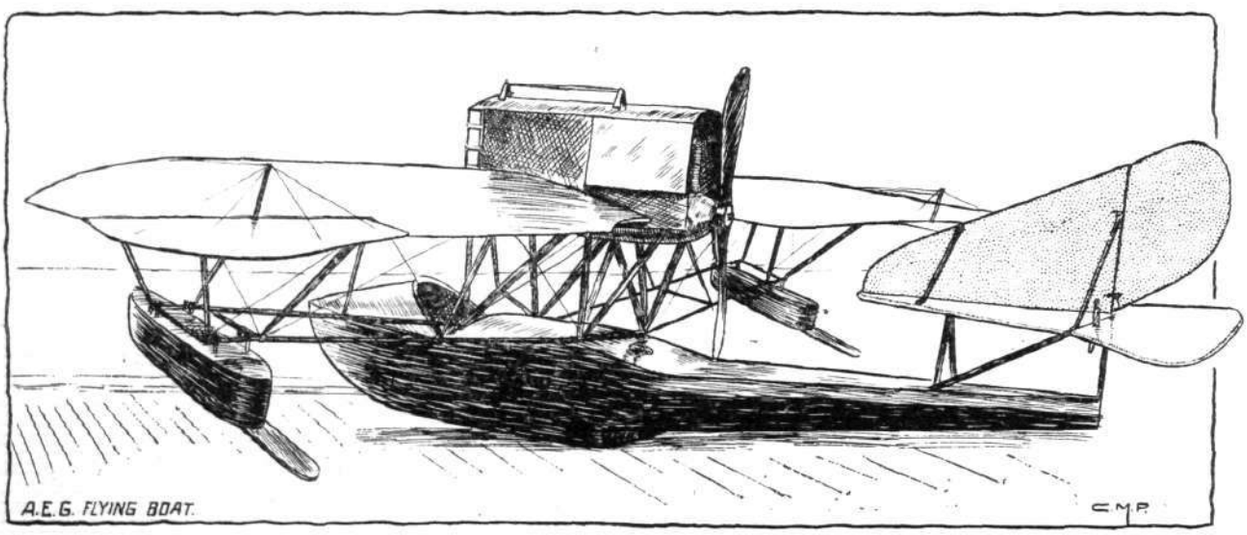


The A.E.G. flying boat starting for a flight.

monoplane wings having slightly back-swept and upturned wing tips after the fashion somewhat of the Taube land machines. The upturned tips are not, however, extensions of the framework of the main planes, but take the form of hinged *ailerons* and serve to maintain lateral stability. The wings are built up of wooden ribs over steel tube spars. Instead of the cable bracing usually associated with machines of the monoplane type, there is in the A.E.G. a sub-structure in the form of a girder underneath the wings. On each side two booms, which are virtually steel tubes, run from the gunwales of the boat to a point some distance inside the wing tips. In order to keep them clear of the water these booms slope upwards towards the outer ends, where are carried the wing tip floats to which reference will be made later.

From the booms streamline steel tube struts run to points on the front and rear spars of the main planes, to which they are secured by means of the ball and socket joint that forms the subject of one of the accompanying illustrations. The strut, it will be seen, terminates in a spherical head which fits into the conical socket on the wing spar or outrigger booms, as the case may be. This head has cut through it a slot tapering towards the centre of the ball, where it accommodates a small bolt passing through the sides of the conical socket. In one direction the ball, and with it the strut, may be oscillated through a large arc, as the ball is in this plane concentric with the bolt. On the other hand, the tapering slot allows of moving the strut in the opposite direction through an angle proportionate to the length of the tapering slot in the ball. The conical socket is enclosed on two sides by a steel plate which passes round the spar or outrigger, to which it is secured by welding. It is thus possible to mount the strut at a variety of different angles, which is an advantage for experimental purposes when it is desired to find the most favourable position for the wing tip floats, and also facilitates folding the wings for transport or storage.

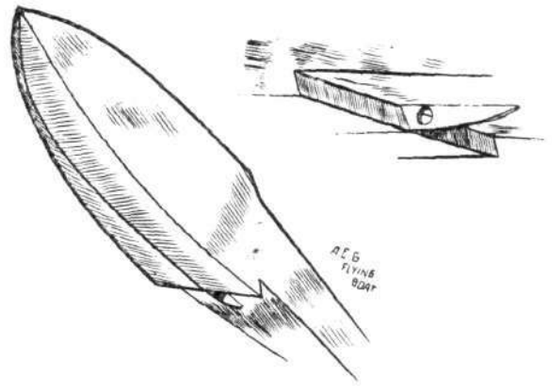
These floats are mounted flexibly on the outer ends of the outrigger booms by means of rubber bands taken round extensions of the booms and round four steel tube fittings having the shape of an inverted U and secured to the top of the floats. Additional springing is provided by the spring boards mounted underneath the flat bottom of the floats. Mounted on a strong structure of streamline steel tubes running down to the centre of the boat is the engine—a 150 h.p. Benz—which is totally enclosed on the sides by an aluminium and fabric housing attached to the inner ribs of the main planes. In front of this housing is mounted the radiator, whilst the rear is left uncovered to facilitate the escape of the air and exhaust gases. Inside the housing, between the radiator and engine, are mounted two small tanks, one of which contains the lubricating oil, whilst the other is the petrol service tank. The main supply of petrol is carried in a larger tank placed down inside the boat behind the seats. A *cabane* of steel tubes rests on the struts carrying the engine and run up through the engine housing, through the roof of which it projects



The new German A.E.G. flying boat, built just before the commencement of the War.

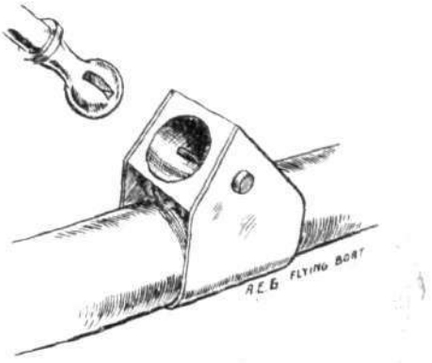
slightly. Two large rings or eye bolts at the upper end of the *cabane* members serve to receive the hooks of two strong cables, by means of which the whole machine can be lifted out of the water.

The main float or boat is of the single step type, and runs to a point in the bow, while at the stern it terminates in a vertical knife edge. The portion of the boat bottom in front of the step is V-shaped near the nose, flattening

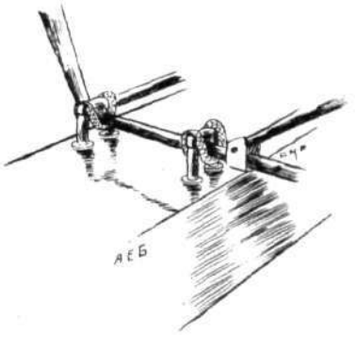


View from underneath of the front portion of the boat, and rear view of step.

out gradually towards the step, where it becomes quite flat. The rear part of the boat from the step to the stern is perfectly flat-bottomed. Inside the cockpit, which is situated just ahead of the front engine struts, are arranged the two seats, the occupants of which are protected from water spray and wind by the curved front portion of the deck. Six bulkheads divide the boat into seven water-tight compartments, the first bulkhead occurring in front of the cockpit, the second one behind the cockpit, between it and the compartment containing the main petrol tank; the third one occurs immediately over the step, and the remaining ones are placed at regular intervals back to the stern. At the rear, mounted on a somewhat frail-looking structure of steel tubes, are the tail planes, which consist of an approximately triangular



The ball and socket strut joint employed in the A.E.G. flying boat.



Sketch showing suspension of wing tip floats.

shaped fixed horizontal plane, to which is hinged the undivided elevator, surmounted by a vertical fin, to the rear edge of which is hinged the rudder.

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A Paper by Mr. Lanchester.

"THE Flying Machine—The Aerofoil in the Light of Theory and Experiment" is the title of a paper which Mr. F. W. Lanchester is to read before the Institution of Automobile Engineers at the meeting to be held on Wednesday next, at 8 p.m., at the Institution of Mechanical Engineers, Storey's Gate, St. James's Park, S.W. An invitation is extended to all those interested in the subject to be present at the meeting, and a card of invitation may be obtained on application to the Secretary of the Institution, 28, Victoria Street, London, S.W.

The Wrecked German Airships.

ACCORDING to information received from Copenhagen, several steamers passing through the North Sea report having seen pieces of wreckage which are supposed to be parts of the derelict "L 4."

The body of a German sailor has been found in Lym Fiord, near Thisted. It had two lifebelts round it, and evidently had not been long in the water.

A Prize for Zeppelin Hunters.

ALTHOUGH there is no doubt that every member of our Anti-Aircraft Corps will put forth his best efforts, should an opportunity present itself, in order to "bag" a raiding Zeppelin, there is no doubt that the prize of £500 offered by Sir Charles Wakefield to the first person or persons responsible for the bringing down of a Zeppelin on the soil of the United Kingdom, will stimulate vigilance among this branch of our defence.

Paris and Aerial Raids.

THE *Morning Post* correspondent in Paris, on the 25th ult., sent the following notes on the aerial defence of Paris at the present time :—

"Visitors to Paris from London observe that Paris, as befits the *Ville Lumière*, is allowed far more light in the evening than London. Far more lamps are lighted now than was the case a few months ago, and even along the embankments it is quite possible to find one's way without falling over piles of stones and other obstacles which a short time ago made walking in the darkness almost impossible.

"The Germans are still at no great distance, but their aviators seem to have lost their audacity. One explanation of their disappearance is undoubtedly to be found in the efficient system of air patrols that is now in force. Last night eight aeroplanes were flying over Paris at various altitudes, ready to give a very warm reception to any enemy aeroplane which showed itself. One of these machines reached an altitude of 6,000 ft., at which the thermometer marked a temperature of little more than 10 deg. Fahrenheit. The flotilla was out for over four hours."

A Scare at Friedrichshafen.

WRITING on February 25th, a *Daily Express* correspondent at Geneva said :—

"A telegram received here from Constance announces that a panic was caused at Friedrichshafen on Tuesday night by a visit from two English or French aeroplanes.

"As soon as the aviators were sighted the Zeppelin sheds were hastily protected by means of metal netting, all lights in the town were extinguished, and the inhabitants took refuge in the cellars. The aeroplanes were first seen off Lake Constance between six and seven o'clock, and were then flying southwards. They circled over Meersburg, and subsequently reached Belfort."

The Royal Aero Club of the United Kingdom

OFFICIAL NOTICES TO MEMBERS

ANNUAL GENERAL MEETING.

The Annual General Meeting of the Members of the Royal Aero Club of the United Kingdom will be held on Tuesday, March 23rd, 1915, at 5 o'clock, at 166, Piccadilly, London, W.

Committee.

In accordance with the rules, the Committee shall consist of eighteen Members. Members are elected to serve for two years, half the Committee retiring annually. Retiring members are eligible for re-election.

The retiring Members of the Committee are :—

Griffith Brewer.
Ernest C. Bucknall.
John D. Dunville.
Col. H. C. L. Holden, C.B., F.R.S.
Prof. A. K. Huntington.
Flight Commander F. K. McClean, R.N.A.S.
Alec Ogilvie.
Mervyn O'Gorman, C.B.
C. F. Pollock.

Any two Members of the Club can nominate a Member to serve on the Committee, provided the consent of the Member has been previously obtained. The name of the Member thus nominated, with the names of his proposer and seconder, must be sent in writing to the Secretary not less than fourteen days before the Annual General Meeting. The last day for the receipt of nominations is Tuesday, March 9th, 1915.

The following Members have been nominated :—

Griffith Brewer.
Ernest C. Bucknall.
John D. Dunville.
Col. H. C. L. Holden, C.B., F.R.S.
Prof. A. K. Huntington.
Flight Commander F. K. McClean, R.N.A.S.
Mervyn O'Gorman, C.B.
C. F. Pollock.

A ballot paper for the election of nine Candidates to the Committee of the Club will be forwarded to each Member at least seven days before the date of the Annual General Meeting.

Aviators' Certificates.

The following Aviators' Certificates have been granted :—

1097 Stanley Winther Caws (Maurice Farman Biplane, Military Aviation School, Brooklands). Feb. 25th, 1915.

1098 Flight Sub-Lieut. Reginald Alexander John Warneford, R.N.A.S. (Bristol Biplane, Royal Naval Air Station, Hendon). Feb. 25th, 1915.

1099 2nd Lieut. Hugh Vivian Champion de Crespigny (Maurice Farman Biplane, Military Aviation School, Brooklands). Feb. 26th, 1915.

THE FLYING SERVICES FUND.

Administered by The Royal Aero Club.

THE Lords Commissioners of the Admiralty and the Army Council having signified their approval, the Royal Aero Club has instituted and will administer a fund originated by M. André Michelin for the benefit of officers and men of the Royal Naval Air Service and the Royal Flying Corps who are incapacitated on active service, and for the widows and dependents of those who are killed.

The fund is intended for the benefit of all ranks, but especially for petty officers, non-commissioned officers and men.

In view of the great utility of the work of the Flying Services, evidence of which has been repeatedly given in the official despatches of the Commander-in-Chief, the skilful and daring flights into enemy country, and the protection afforded by the continuous patrolling of our coast by aircraft, it is confidently expected that the British public will welcome this opportunity of showing their appreciation by subscribing promptly and liberally to the fund.

The Right Hon. Lord Kinnaird has kindly consented to act as Honorary Treasurer to the Fund.

Subscriptions should be forwarded to The Flying Services Fund, The Royal Aero Club, 166, Piccadilly, London, W., or to Barclay and Co., Ltd., 1, Pall Mall East, London, S.W. Cheques should be crossed "Barclay and Co., Ltd."

TULLIBARDINE, Brig.-General,
Chairman of the Royal Aero Club.

	£	s.	d.
Total Subscriptions received to February 24th, 1915 ...	6,943	13	0
H. Jarrott	0	2	0
Bowden Wire, Ltd....	3	3	0
Admiral of the Fleet Sir Edward Seymour	10	10	0
Stephen J. Norton ...	0	10	6
F. A. Bullivant ...	25	0	0
Bullivant & Co., Ltd.	52	10	0
E. Dukinfield Jones	10	10	0
R. H. R. Wilkinson	2	2	0
G. P. Wall	2	2	0
Dover, Ltd.	5	5	0
W. F. Hoare-Ward...	1	1	0
Members of the Scottish Aeronautical Society Model Aero Club	2	8	0
The Hunslet Engine Co., Ltd.	5	5	0
The British Aluminium Co., Ltd. ...	5	0	0
Wolseley Motors, Ltd.	100	0	0
2nd-Lieut. Richard Raymond-Barker...	1	1	0
J. H. Nicholson ...	5	5	0
P. E. Hughesdon ...	2	0	0
Total, March 3rd, 1915 ...	£7,177	7	6

The Grahame-White Aviation Company are very kindly arranging a Flying Meeting to be held at the London Aerodrome, Hendon, in aid of the Flying Services Fund. The date of the Meeting will be announced shortly.

166, Piccadilly, W. B. STEVENSON, Assistant Secretary.

FROM THE BRITISH FLYING GROUNDS.

London Aerodrome, Collindale Avenue, Hendon.

Grahame-White School.—Monday, last week, Probationary Flight Sub-Lieuts. Cain and Irving, solo circuits ; Dunn, Ferrand, Johnson, Reid and Tollemache, solo straights ; Everett, Feeney, Hards, Hood and Morrison, straights with Instructors Manton, Russell and Winter.

Tuesday, Probationary Flight Sub-Lieuts. Irving and Cain, solo circuits ; Reid, half-circuits, and Tollemache and Morrison, solo straights.

Wednesday, too windy for flying practice for pupils.

Thursday, Probationary Flight Sub-Lieuts. Reid, Cain and Irving, solo circuits, &c. ; Ferrand and Johnson, solo straights ; Everett, straights with Instructor Russell.

Friday, Saturday and Sunday, too windy for pupils.

Beatty School.—During last week the following pupils were out on the two-seater machine accompanied by the instructors, the pupils receiving instruction being Messrs. A. Gordon Bond, B. de Meza, A. G. Hayward, V. E. Faning, Gerrit Forbes, H. H. Bright, R. F. Laver, J. H. Vickers, and Y. K. Leong. The instructors for the week were Messrs. Geo. W. Beatty, W. Roche-Kelly, and C. Prodger. Machines in use, two-seater propeller biplanes fitted with the controls arranged in duplicate.

Hall School.—Pupils receiving instruction last week were Messrs. A. Davy, McConnochie and Furlong, and Lieut. Blyth. Pupils having solo practice in full control of machines : Messrs. A. Davy, 1 hour straights ; McConnochie made several good circuits and eights preparatory to going for certificate. Instructor for the week, J. L. Hall. Machines in use, three Hall tractor biplanes of graduated h.p. for easy training.

London and Provincial Aviation Co.—Monday, last week, Messrs. M. G. Smiles, test flight ; J. H. Moore, circuits ; F. H. Lincoln, half circuits ; P. A. Watson,

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Prob. Ft. Sub-Lt. E. de C. Hallifax, R.N. Prob. Flight Sub-Lieut. J. S. Mills, R.N. Prob. Flight Sub-Lieut. Hilliard, R.N.
A trio of pupils who have recently passed their *brevets* at the Grahame-White School, Hendon.

straights; E. C. England Derwin, straights. G. W. Bransby Williams for extra practice, 2 flights, reaching 1,800 ft. and 2,000 ft. respectively.

Tuesday, Messrs. W. T. Warren, test flight; J. H. Moore, circuits and eights; G. W. Bransby Williams (extra practice 14 mins.); J. Noakes (extra practice 16 mins.). Wednesday, flying impossible.

Thursday, Messrs. M. G. Smiles, test flight; J. H. Moore, circuits and eights, now ready for *brevet*; F. H. Lincoln, circuits; P. A. Watson, straights; J. Noakes (extra practice), flight 14 mins.; G. W. Bransby Williams (extra practice), doing fine spiral from 1,500 ft.; V. E. Fanning rolling, and Monsieur Deschamps rolling—new pupils.

Ruffy-Baumann School.—Monday last week, the following pupils out:—Mr. King (16 mins.), Mr. Hydon (10 mins.), Mr. Blandy (10 mins.), Mr. Kenworthy (10 mins.), Mr. Jackson (5 mins.)—all on 60 Caudron.

Tuesday, test flight made by E. Baumann on 60 Caudron, and took up Mr. King for a few minutes.

Thursday, on 60 Caudron Mr. Kenworthy (10 mins.). Mr. King (11 mins.), Mr. Blandy (10 mins.), Mr. Jackson (10 mins.) Mr. Kenworthy and Mr. King getting on well; soon ready for solo flights on 45 Caudron. Week-end weather too bad for school work.

Instructors for week, E. Baumann and James Brothers.

Northern Aircraft Co., Ltd.

The Seaplane School, Windermere.—Flying on Monday, Tuesday, and Friday last week. Mr. W. Rowland Ding gave instruction to G. L. Railton (15 mins.), A. Johnson (18), R. Buck (15), S. J. Sibley (13), P. D. Robinson (17). R. O. Lashmar, taking extra practice, made flights on the N.A.C. biplane, N.A.C. pusher monoplane, and N.A.C. Avro biplane, which in turn were all used for tuition during the week.

A number of new students have joined this week: F. H. M. Macintyre, J. F. Ridgway, Lieut. L. L. Atherton, R.N., P. D. Robinson (extra practice), and J. L. Parker (extra practice). Mr. W. Rowland Ding took the 80 mono. up to 2,000 ft. for testing purposes.

THE BRITISH AIR SERVICES.

UNDER this heading are published each week the official announcements of appointments and promotions affecting the Royal Naval Air Service and the Royal Flying Corps (Military Wing) and Central Flying School. These notices are not duplicated. By way of instance, when an appointment to the Royal Naval Air Service is announced by the Admiralty it is published forthwith, but subsequently, when it appears in the LONDON GAZETTE, *it is not repeated in this column.*

Royal Naval Air Service.

THE following was announced by the Admiralty on the 24th ult.:—

Acting Flight-Lieut. D. C. S. Evill confirmed in the rank of Flight-Lieutenant, with seniority of Dec. 4th, 1914, and appointed to "President," additional, for R.N.A.S. Feb. 22nd.

The following Probationary Flight Sub-Lieutenants confirmed in the rank of Flight Sub-Lieutenant, with seniority as follows: D. Iron and B. L. Huskisson, Sept. 16th and 17th, 1914, respectively; D. M. Barnes (for temporary service) and K. F. Watson, Oct. 12th, 1914; E. J. Cooper, P. E. H. Wakeley, and G. F. Breese (for temporary service), Oct. 17th, 27th, and 30th, 1914, respectively; W. L. Welsh, F. W. Gamwell, and H. J. Batchelor, Nov. 7th, 16th, and 25th, 1914, respectively.

G. St. G. Kelton entered as Probationary Flight Sub-Lieutenant, for temporary service, with seniority of Feb. 23rd, and appointed to "President," additional, for R.N.A.S.

The following was announced by the Admiralty on the 25th ult.:—

Flight-Lieuts. I. H. Waldegrave, S. Dalrymple-Clark, C. H. Collet, D.S.O., R. J. Bone, C. H. K. Edmonds, D.S.O., I. G. V. Fowler, H. M. Cave-Browne-Cave, C. E. Robinson, and T. J. T. Cull all promoted to the rank of Flight-Commander, with seniority of Feb. 23rd, and appointed to "President," additional, for R.N.A.S.

Probationary Flight Sub-Lieut. G. W. Price confirmed in the rank of Flight Sub-Lieutenant, with seniority of Oct. 5th, 1914, and appointed to "President," additional, for R.N.A.S. Feb. 24th.

R. B. Munday entered as Probationary Flight Sub-Lieutenant, with seniority of Feb. 16th, and appointed to "President," additional, for R.N.A.S.

The following was announced by the Admiralty on the 26th ult.:—

Carpenter T. C. James, graded as Warrant Officer (second grade),

and appointed to the "President," additional, for R.N.A.S. Feb. 22nd.

The following was announced by the Admiralty on the 27th ult. :—

Lieut.-Commander H. Finch-Dawson to the "President," additional, for (N) duties in the R.N.A.S.

A. Ogilvie entered as Squadron-Commander, for temporary service, with seniority Feb. 19th, and appointed to the "President," additional, for R.N.A.S. To date Feb. 19th.

The following was announced by the Admiralty on the 1st inst. :—

G. H. Beard and R. C. Hardstaff entered as Probationary Flight Sub-Lieutenants for temporary service, and appointed to the "President," additional, for R.N.A.S. To date Feb. 27th.

H. Thompson granted a temporary commission as Lieutenant, R.N.V.R., with seniority of Feb. 28th, and appointed to "President," additional, for R.N.A.S.

N. H. Terry has been granted a temporary commission as Sub-Lieutenant, R.N.V.R., with seniority of Feb. 28th, and appointed to R.N.A.S.

The following appeared in the *London Gazette* of the 2nd inst. :—

Royal Naval Division.—Temporary Lieut. J. F. Hay, R.M., transferred to Royal Naval Air Service as Probationary Flight Sub-Lieutenant. Dated Feb. 10th, 1915.

Royal Flying Corps (Military Wing).

THE following appeared in a supplement to the *London Gazette* issued on the 24th ult. :—

The following appointments are made :

Flying Officers : Temporary Lieut. M. L. Braithwaite, R.A., and Lieut. W. B. Hargrave, 5th Batt. Suffolk Regt., Territorial Force. Feb. 12th, 1915.

Special Reserve. Supplementary to Regular Corps.—Second Lieut. (on probation) Richard H. Collier is confirmed in his rank. James D. Latta to be Second Lieutenant (on probation). Feb. 9th, 1915.

The following non-commissioned officer to be Second Lieutenant for service in the field :—

Queen's Own (Royal West Kent Regt.).—1st Class Air-Mechanic Arthur F. Quinlan, from Royal Flying Corps. Feb. 10th, 1915.

The following appeared in a supplement to the *London Gazette* issued on the 25th ult. :—

The following appointments are made :

Adjutant (graded as a Flight-Commander) : Capt. Hon. John D. Boyle, Rifle Brigade (Prince Consort's Own). Feb. 3rd, 1915.

Flying Officers to be Flight-Commanders ; Feb. 16th, 1915 : Lieut. E. N. Fuller, Special Reserve, and to be temporary Captain ; Second Lieut. L. A. Strange, Dorsetshire Regt., and to be temporary Captain ; Capt. F. B. Binney, R.A. ; Capt. L. W. B. Rees, R.A. ; Capt. J. D. G. Sanders, R.A.

Flying Officer : Capt. John C. Halahan, Reserve of Officers. Feb. 17th, 1915.

The following appeared in the *London Gazette* issued on the 26th ult. :—

The following appointments are made :

Flight-Commander : Second Lieut. (temporary Capt.) F. C. Jenkins, Special Reserve, a Flying Officer. Feb. 17th, 1915.

Special Reserve. Supplementary to Regular Corps.—To be Second Lieutenants (on probation) : Tom V. Smith : Feb. 1st, 1915. John W. Griffith ; Feb. 16th, 1915.

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EDDIES.

A FRIEND of mine tells me that according to a German paper a fire broke out during a thunderstorm at the sheds of the Lilienthal flying ground at Neustadt. All the sheds were burnt down to the ground, and several mono- and bi-planes belonging to local firms were destroyed. A petrol depôt with about 600 litres of petrol, which was only 50 metres from the burning sheds, curiously remained intact.

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From Sweden I hear that a new Swedish aviation motor has lately been arousing great interest in that country. It has been designed by a Stockholm engineer, Mr. Linel. If the new motor comes anywhere near the expectations of its designer, it will in all probability have great effect on the future development of aviation, for it is stated to weigh only slightly over a pound per horse-power. Two motors have been built, one of 100 h.p. and one of 50 h.p., but no particulars of design or construction are at present available.

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I take the liberty of drawing the attention of our military authorities to the following cutting from the *New York World* :—

"At the military camp at Vizzola, Ticino, Italy, the authorities have been experimenting with a new biplane whose inventor is not known, though it is supposed that pilot Pensuti, who has been taking it up during the experiments, is responsible for its construction. It is larger than any other aeroplane in Italy, measuring 70 ft. from wing to wing, and has 300 h.p. distributed among three rotary motors, so placed that the pilot can repair any two while the 'plane is in motion. There are armoured seats for three men, and a 4-in. gun. (Steady, boys, steady !) The machine went up a mile and a quarter with complete success recently. It is able to stay in the air 25 hours, and can carry a cargo weighing about a ton. Its average speed is 125 miles per hour."

This ought to be quite a handy little tabloid 'bus to have round the house, and it is to be hoped that our military authorities will lose no time in acquiring a dozen or so.

When a new machine makes its first appearance at any of our aerodromes, it has always been, and probably always will be, the subject of criticism by the aerodrome *habitués*, who are as a rule very apt at querying generally and more particularly any special departures. One thinks she is "horribly under-powered," another is quite certain that "her centre of gravity is too far back" or that her tail plane, if she be fitted with one, is set at the wrong angle, and so on *ad infinitum*. Not that there is any malice in the criticism ; it is more often used as a means for "ragging" the designer. Arriving at the Hendon aerodrome the other day, a short time after the new Grahame-White tractor had been showing its form, I firmly expected to hear a lot of the usual yarns about the performance of the 'bus. I was quite surprised to be unable to find in the whole place anybody who had discovered anything to find fault with in her performance. It must not be inferred, of course, that I expected anything to be wrong with the 'bus, but I did expect there would for sure be things said, and, as a fact, I did, but it was nothing but praise. In fact, the splendid behaviour of the latest product of the G.-W. firm was the topic of conversation in all the sheds.

I am not in possession of actual figures, but people who are old hands at judging velocities state that the speed of this new Grahame-White machine must be over 90 miles per hour, and that she lands at between 30 and 35 miles. One thing should be noted in this connection, that Flight Commander C. Grahame-White was the man at the helm, and his experienced piloting would go a long way towards getting the best results possible out of the 'bus. As flown recently, the chassis fitted was of the very simplest imaginable type, consisting of two V's of steel tubes, with the axle mounted rigidly, so that no other springing was provided than that furnished by the large diameter Palmer tyres. While this type of chassis is very strong and offers a minimum of resistance, and is quite good enough for landing on the smooth ground of an aerodrome, it is hardly adequate for military purposes, where landings have to be effected on any sort of soil, and I understand that a new type of chassis will be fitted

very shortly, providing more suitable springing. As a military machine the new Grahame-White tractor should have great possibilities, for with a speed range of from, say, 90 to 35 miles per hour, a fuel capacity of $5\frac{1}{2}$ hours, and the practically unrestricted view in a forward and downward direction from the observer's seat, she possesses pretty well the most desirable features that it is feasible to incorporate in a machine of the tractor type, and Mr. J. D. North, the designer, is to be warmly congratulated upon the efficiency of his new model, and Mr. "Bill" Law on the way in which he has seen to the constructional work.

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Speaking about Grahame-White workmanship, reminds me that a large batch of Moranes are now in course of erection, and a very fine-looking lot they are. The Morane appears such a simple job that one would not expect much trouble in their construction, but there are a number of rather intricate fittings which have to be very carefully made if the result is to be satisfactory and interchange of parts a matter of a few moments. From what I have seen of the Grahame-White built Moranes, no trouble is to be anticipated in this respect, and the whole batch are well up to the usual high standard maintained in the G.-W. shops.

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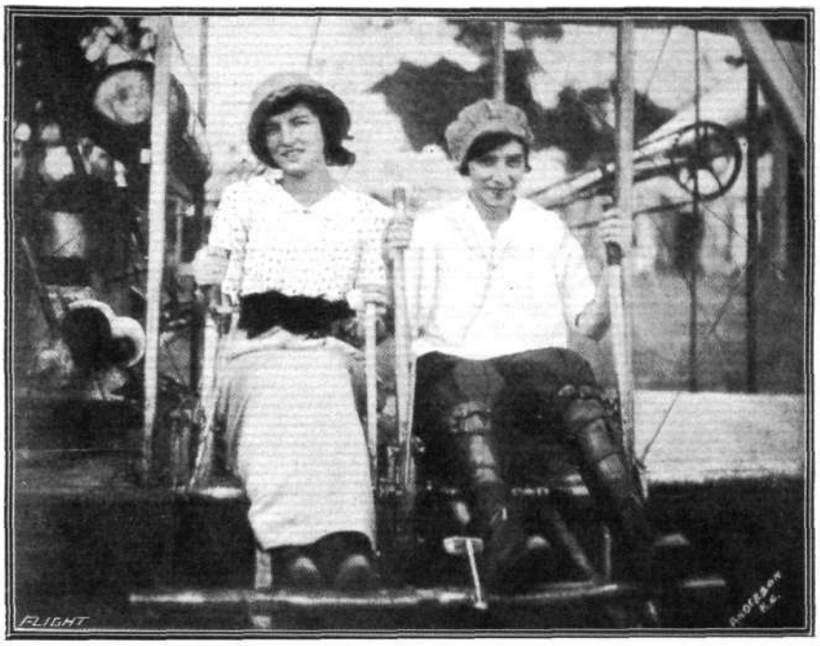
In the "Eddy" last week regarding the Mann biplane, it was mentioned that the Anzani engine was not giving full power owing to the fact that the control cable had stretched, thereby preventing the pilot from giving full throttle. Since the appearance of the above-mentioned paragraph it has been pointed out to me that the wording of the paragraph might be misconstrued, and give the impression that something was the matter with the engine, whereas, as a matter of fact, the Anzani chief engineer had tuned her up to concert pitch, and she was in absolutely perfect condition, and was only prevented from doing her best by the inopportune stretching of the throttle cable.



Misses Marjorie C. and Katherine Stinson, two American pilots. The former is aged 18, the latter 20, and both fly Wright machines. Miss Katherine Stinson has been flying for a long time past, her sister joining her last year, and they are continually giving demonstrations in the United States.

It is as well that this point should be made clear, although the reputation of the Anzani engines as a type is such that even if this individual engine had indeed happened to be in a sulky mood it would not in any way have tended to detract from the excellence of these well-known engines.

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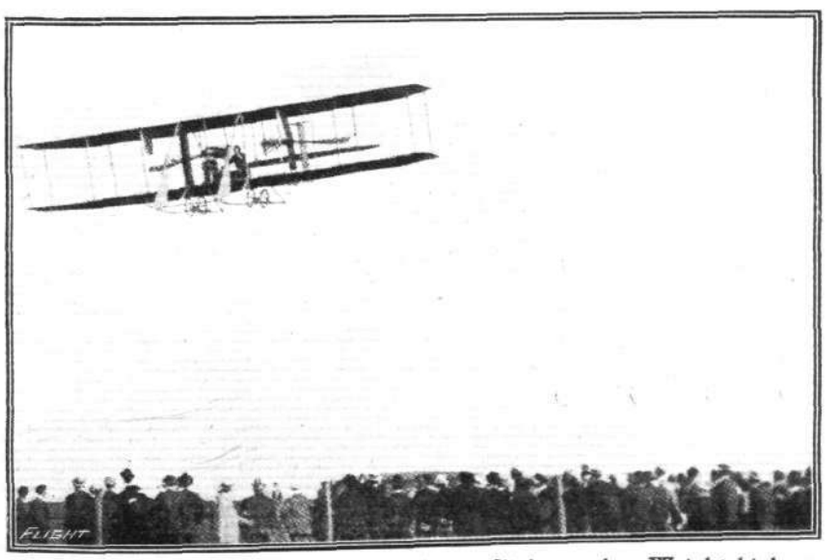
Mr. E. Baumann, who, as mentioned in "Eddies" some little time ago, has now become a partner in the Ruffy School of Flying at Hendon, is already quite familiar with the handling of the Caudron, although some little time has elapsed since he last flew this type of machine, previous to joining the Beatty School as instructor. That he is a believer not only in the stability but also in the controllability of the Caudron is evident, for it is quite a habit of his to take a pupil up to a height of a few hundred feet and then to give over to him full control of the machine. If the pupil makes a mistake, which it is almost inevitable that he should, Baumann calmly stands up in his seat, and, leaning over the shoulder of the pupil, shows him how to correct it. Baumann says that although the 'bus may at times wobble a bit there is really little danger, provided you are up high enough, as there is then plenty of time for him to right her, in spite of whatever awkward positions the pupil may have got her into. In addition to the Caudron biplane and the other school machines constructed by the James Brothers, a third biplane is coming along, the various parts for which are finished. This machine will be put together as soon as sufficient floor space is available. It will be fitted with dual control, so that Baumann will not have to do climbing stunts round the machine when instructing his pupils in mid-air.



Miss Katherine Stinson on an exhibition flight on her Wright biplane in America.

In the Hall sheds, next door to the Ruffy school, there is great activity erecting a new *fuselage* tractor biplane which will be tested very shortly. This machine was not built by the Hall Aviation Company, by the way, but Mr. Hall will pilot it in its test flights. It is quite a neat little 'bus, and I should like to tell my readers something more about it, but, as I am bound to silence for the moment, they must have a little patience, and once it has proved its capabilities I will see there is no delay in giving details.

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Just by way of showing what careful tuning up of an engine and machine can accomplish I may mention that one of the little 35 h.p. Anzani-engined school machines in use at the Hall school has repeatedly flown with a passenger, and does not seem very under-powered at that, although it would be asking too much of the engine, of course, to carry two up for any extended period, but the mere fact that this little three-cylinder thirty-fiver will lift a pilot and passenger is sufficient to justify the high position in aviation which the Anzani has achieved.

I hear from a very reliable source that they have been having some nice little fireworks at the German Flying Ground at Niederneuendorf, where, through the careless handling of a blow lamp, a fire broke out, and all the sheds belonging to the A.E.G. firm were burnt to the ground, several machines in various stages of completion being badly damaged or totally destroyed. From the same correspondent I hear that the Kaditz Aerodrome near Dresden has been converted into a concentration camp, with room for 30,000 prisoners. Perhaps the idea is that some of the Allies' airmen, were they to get as far as Dresden, might be tempted to drop bombs on the sheds thinking that they contained aeroplanes instead of prisoners of war. Something similar seems to have happened at Southend, where a German airman is reported to have dropped a bomb, which fell about 50 yards away from the "Ivernia," the old Cunarder, which has been doing duty as an internment camp for about 1,376 military German prisoners.

"ÆOLUS."

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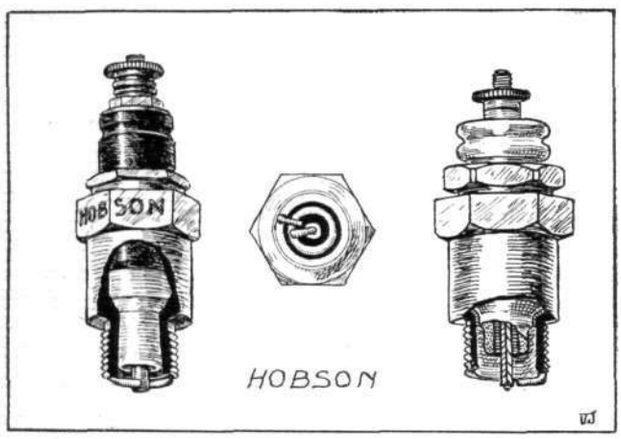
HOBSON AVIATION PLUGS.

To their well-known qualities of reliability and efficiency, Hobson plugs now have the additional merit of being British made, a step upon which Messrs. H. M. Hobson, Ltd., of 29, Vauxhall Bridge Road, London, S.W., are to be commended. In our sketches are shown two of the many forms of Hobson plugs, that on the left having been selected for notice because of the excellent service it has been rendering at the front in spit of the gruelling conditions. It is known as model No. 2, and is being largely used by the British, Belgian, French, Russian, and



Spanish Governments for aero engines and transport motors. Its principal feature consists of the mica-porcelain insulations, the upper and exposed portion being of the former material, and thus well suited to withstand shocks and rough handling. This insulator is made up of a layer of mica wrapped round the central electrode and an outer wall consisting of a number of mica washers, the whole being compressed to form a solid mass. The lower insulator consists of a special white porcelain shaped to fit on a conical seating formed in the body of the plug with an asbestos washer interposed. The lower portion of the porcelain round the extremity of the electrode is bell-shaped, thereby avoiding any ill-effect due to sooting up. The central electrode is of nickel with a collar at about mid-length forming an abutment for the mica and porcelain insulators respectively. Both insulators are held in place in the body by a lock-nut that bears against a collar formed on the mica insulator and transmits its pressure through the collar on the electrode to the porcelain, thus making a perfectly gas-tight joint on the seating. The body of the plug is of mild steel machined from the bar, and when finished is treated to make it rust-proof. Two nickel negative electrodes are fitted as standard, but the makers recommend the single negative electrode arranged as shown in the centre of our illustration. In this arrangement it will be seen that the electrodes are placed obliquely, by which means, it is claimed, the varying gap meets the conditions entailed by the fluctuations in engine speed. No. 2 plug retails from 4*s.* 6*d.* upwards, according to the depth of body.

The second plug has been specially designed to facilitate starting and for slow running, and is very suitable for motor transport lorries, &c. In this plug the positive electrode is built up of two parts having different coefficients of expansion. Round the positive electrode are three negative electrodes, and the space between one of the latter and the former is only about ·03 mm., across which a spark will easily jump when starting or at slow speeds. As the speed of the engine increases, however, the positive electrode gets hotter and hotter, and owing to the varying expansion of the two parts it bends so that the space between it and the previously mentioned electrode increases. Eventually the spark will cease to jump across this space, but will, instead, jump to the other two electrodes, which are just set the right distance apart to cause the spark to expend all its energies in exploding the mixture. The reverse action takes place as the engine slows down.

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Fatal Accident at Upavon.

IT is with great regret that we have to record another fatal accident at the Central Flying School at Upavon. On the 25th ult., in ideal flying weather, Lieut. Dawson Downing, R.N., was flying a B.E. biplane, when, while flying by the sheds at a height of 200 feet, the machine suddenly made a nose-dive to the ground, the pilot being instantly killed. At the subsequent inquest evidence was given that the controls of the machine were in perfect order, and Flight Commander Dalrymple-Clark, R.N., said that he thought the deceased must have lost control when endeavouring to land. A verdict of "accidental death" was returned.

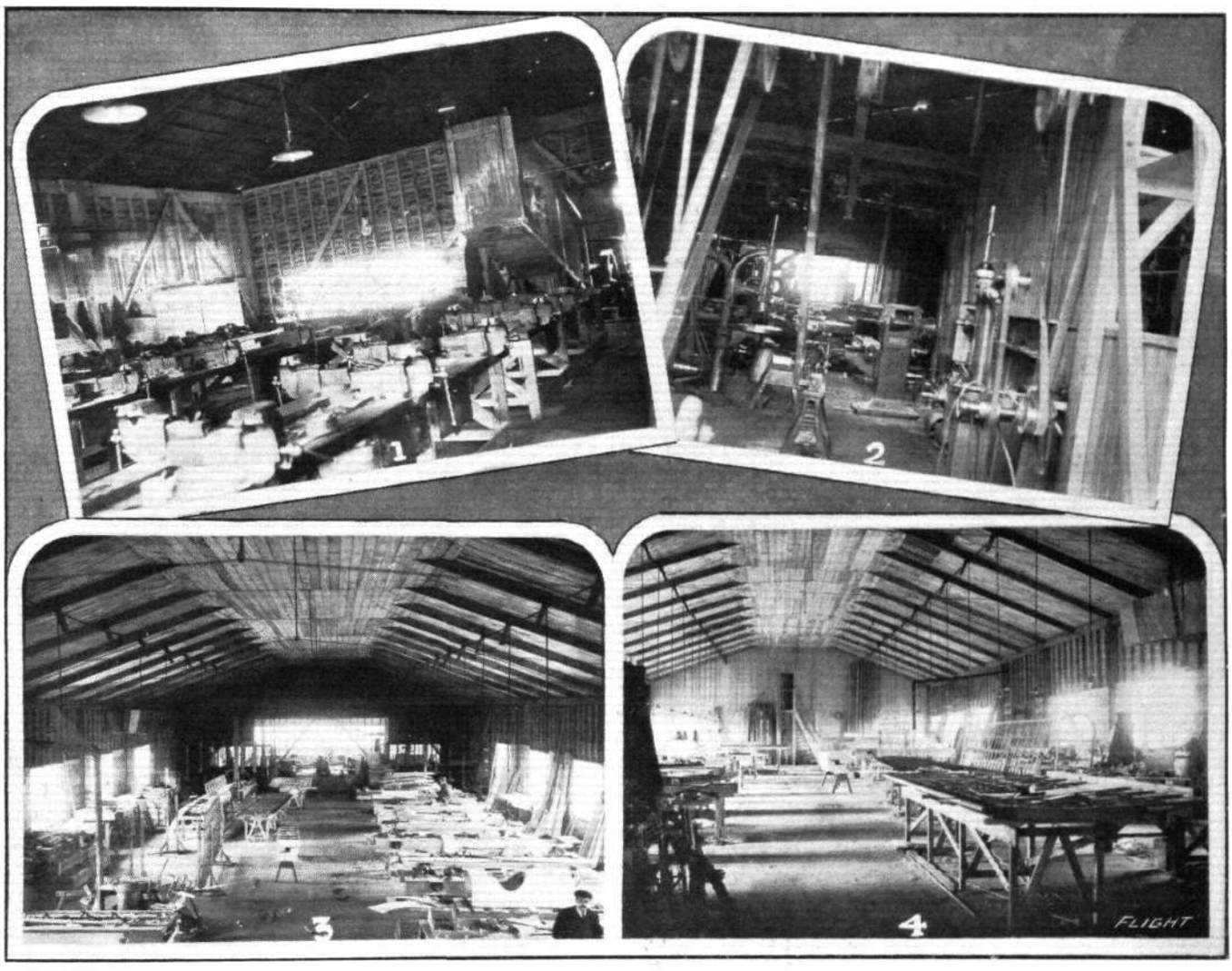
FLIGHT

BRITAIN'S AERONAUTICAL INDUSTRY.

III.—MARTIN AND HANDASYDE'S WORKS AT BROOKLANDS.

WITH the mention of the names—Martin and Handasyde—one's memory at once harks back to the very earliest days of aviation in this country, as long before Blériot flew across the Channel these two pioneers were working on the construction of a monoplane—first at the Welsh Harp and shortly afterwards in the North of England. At the end of 1909, they came south again and took possession of the one aeroplane shed that existed at that time at Brooklands, and which had been erected for the housing of Paulhan's Henry Farman in October of that year. They were thus the first to occupy permanent quarters at that aerodrome; and it may be interesting to many to learn that this early home of theirs is now more familiarly known as the "Blue Bird."

From this beginning the work carried on by the two partners developed, and now they occupy no less than nine hangars, with a floor space of 35,000 square feet, and are still adding to their works. Several monoplanes, resembling in some ways the Antirette, but really of quite a distinctive design, were first constructed, but although they flew well and had a good turn of speed, and despite the excellent work embodied in their construction, they failed to win the official approval that had been hoped for. In 1911–12 were produced what was known as the Martinsyde single seater and the Military Trials machines, and later on came the giant monoplane designed for the Transatlantic flight. As is well known to our readers, work on that machine had to be stopped for reasons outside the control of the designers, but parts of it are still about in the works, and the fuel tank in its crate can be seen underneath the stairs at the end of the new wing erecting shop in No. 4 photograph on this page. This tank has a fuel capacity of no less than 350 gallons.

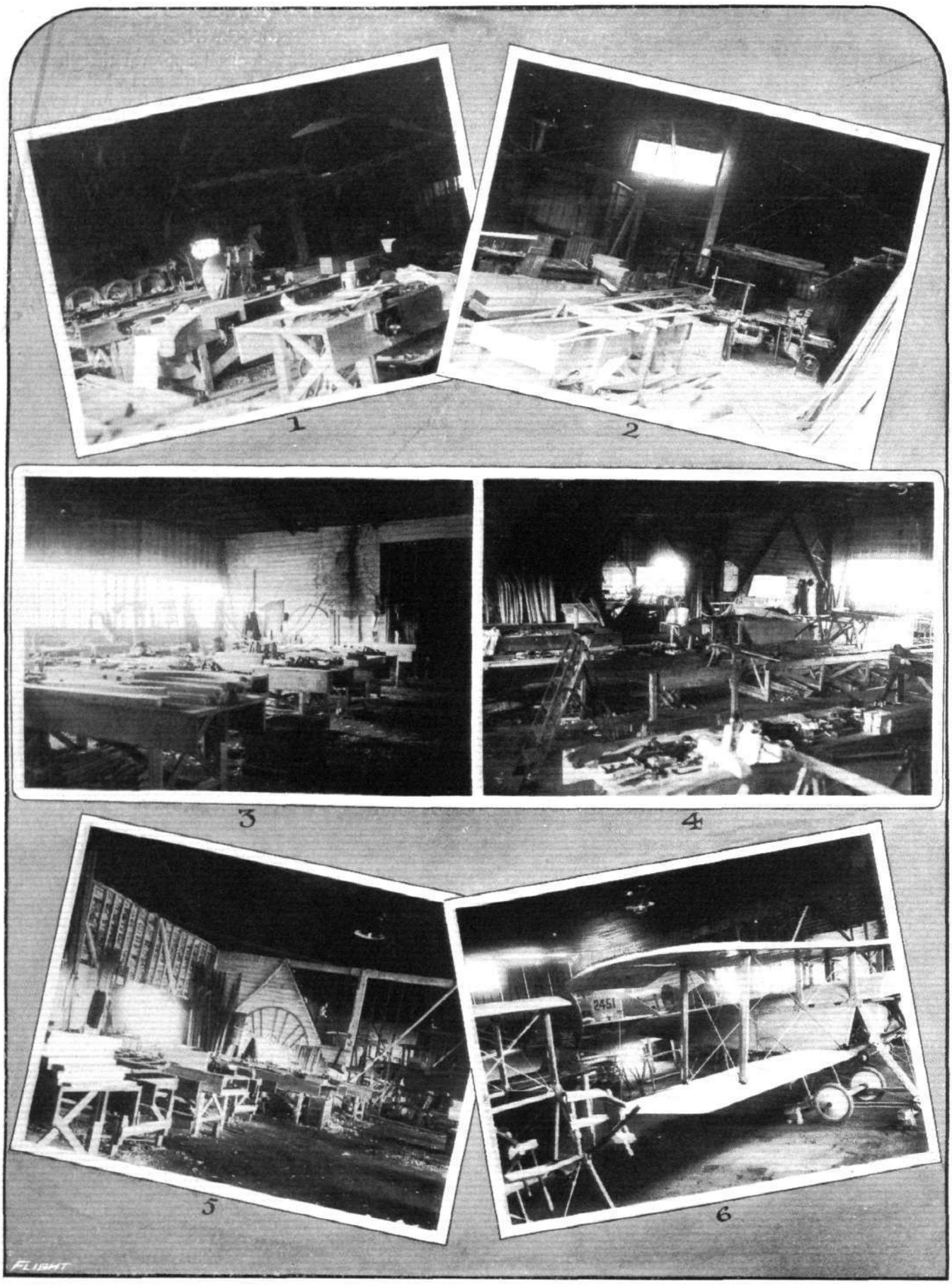


"Flight" Copyright.

THE MARTIN-HANDASYDE WORKS.—1. The metal fitting shop; the gas engine for driving the machine tools and the sawmills is seen on the extreme right. 2. The machine tool shop. 3 and 4. Two views of the recently erected wing assembling shop.

The latest production of the firm is their "tabloid" single seater scouting biplane, an aeroplane that has already shown its capabilities in regard to speed and climbing powers at the Front, and which has averaged 88 miles per hour as the mean of the runs on the Farnborough straight. This, together with a batch of B.Es. which is passing through the shops, is the work upon which Messrs. Martin and Handasyde are now principally engaged.

At the present time, there are about 300 men



"Flight" Copyright.

THE MARTIN-HANDASYDE WORKS.—1, 3 and 5. Three of the wood-working shops. 2. The wood-working machinery shop and the saw-mills. 4. The body-building shop. 6. The erecting shop.

employed at the works at Brooklands, but, like many other firms in the industry, they have experienced difficulty in finding housing accommodation for their employees at a reasonable distance from the works. As the result of this, together with the inadequacy of even their present large premises, it has been found necessary to make the whole of the wing and body coverings and to have a large portion of the machining done in Weybridge. It is hoped shortly that the whole of the machine tool work will be carried out in Weybridge, whereupon the existing sawmills will be extended and take in what is now used as a machine tool shop; while with the completion of the new building at the back of the sheds fronting on to the street and which is similar in every way (the dimensions of the floor space are 50 feet by 120 feet) to that which has recently been erected, Messrs. Martin and Handasyde will be better able to cope with the large amount of work on board.

The constructional portion of the Martin and Handasyde works is divided into two distinct parts—one of which is formed by the six sheds at the extreme end of the back row of hangars, together with the extensions at the rear; while the other is located in two sheds in the road connecting the front with the street. All of these sheds have been provided with adequate natural and artificial lighting and ventilating arrangements.

The general offices, drawing office and stores are accommodated in the end of the back row of sheds. The drawing office is a well-lighted comfortable room, although, owing to the rapid increase of work carried on at the works, it has been found to be hardly sufficient for present needs and will be extended in the near future. The stores too call for special commendation, as the system followed in the issue of and keeping the stores is only one of the evidences of a well-organised factory.

Leaving the stores, the first of the wood-working shops is entered. There are three which may be so designated, as it is in these shops that the struts, spars, longitudinals and other parts undergo such manual operations as are required, although the controls, which form one complete unit on the Martinsyde machines, are also assembled here. From this shop, on the right, is what may be termed the new wing assembling shop. At the far end of the latter on the same floor is the men's dining room, used by those of the firm's employees who live at some distance from the works; and above is the glue room, reached by a flight of stairs. Next to the first wood-working shop is the body-building shop, where the component parts of the body are fitted together before transfer to the erecting shop for assembling with the machine. Passing on through another wood-working shop, there is the erecting shop, which, at the time of our visit was full up with completed machines, and, finally, the third wood-working shop at the far end of the building is reached. All these are connected by a wide gangway, so that although originally they were separate sheds, now they form one building.

Across the road are the mechine and fitting shops and the sawmills, the power for driving the machine tools and the wood-working machines being obtained from a 40 h.p. gas engine, seen in one of our photographs. All the machine tools are of up-to-date design, and include lathes, drilling machines of various types, automatic, sawing and milling machines, &c.; while the wood-working machinery is also modern and suitable for the class of work conducted at the works.

From the first the Martinsyde monoplanes have been noted for the high standard of workmanship embodied in them, and the excellence of the finish imparted to every part of the machines, and there is ample evidence in a marked degree that this is still being maintained in their latest work. With such a record behind them, and with the excellent machines now under construction, Martin and Handasyde have every reason to look forward to continued and increased success in the future.

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German Aviators in North Sea.

IT is not unlikely that the two German aviators who were rescued in the North Sea last week by the motor trawler "New Boy," and landed at Lowestoft, were the ones who had dropped bombs at several places in Essex on Sunday week. Their names are given as Major Proudfynski and Ensign Heym. They appear to have left Ostend on Sunday week, and, according to one report, after their machine was damaged by shots from a British warship, it fell into the sea off the Dutch coast near Scheveningen, one of the floats being broken. The occupants climbed out on to the wing which stuck up out of the water, and sent up flares. After about 30 hours' exposure they were rescued on Tuesday morning in a very exhausted condition by the motor trawler, which had seen their distress signals at 4 a.m., but owing to bad weather was unable to get close enough to take off the men for five hours. The trawler remained at sea until Saturday morning, when the men were landed at Lowestoft and handed over to the authorities, being subsequently conveyed to Donington Hall, Leicestershire.

To Assist Anti-Aircraft Marksmen.

WE have received the following letter, which will probably be of interest to some of our readers who are model enthusiasts, and would be willing to lend their assistance :—

"A relative of mine who is in command of an anti-aircraft section n France writes me that he wants to rig up a kite to carry a model Taube or Aviatik, to give his men some practice in shooting at the real thing.

"It struck me that I could not do better than appeal to your readers, first, with regard to suggestions as to best plan of construction, &c.; secondly, to make and send me some kites and models, which I would gladly forward to the sections in France.

"The models, of course, would have to be very light—and cheap—and there would have to be at least a dozen models to every kite to allow for shots that get home.

"The kite and models would have to be collapsible for packing and transport, and the size of the model should measure about five to six feet across.

"It is proposed to tow the kite behind a motor car.

"I need hardly say that any assistance will be most gratefully acknowledged, and the names and addresses of donors will be sent with each model."

Those who can assist in this direction should write to Capt. Sefton Purdey, Braishfield Lodge, Romsey, Hants.

Australian Aviators for India.

ACCORDING to a cable from Melbourne last week, Mr. Pearce, Commonwealth Minister of Defence, stated that at the request of the Indian Government, the Commonwealth was sending to India aviators and equipment for active service, and India was supplying the aeroplanes.

Double Fatality at Buc.

WHILE testing a new machine which they had designed, two Belgian brothers met their death at Buc on the 24th ult. The machine fell from a great height, and both occupants were instantly killed.

AIRCRAFT AND THE WAR.

IN a long despatch to the *Daily Mail*, dated Cairo, February 16th, dealing with the Turkish attempt to invade Egypt, Mr. J. M. N. Jeffries said :—

"But the Turks steadily went on dragging their fated pontoons across the sand. There could be no question of surprise. Sooner or later they were bound to debouch into the range of hostile aeroplanes. In a couple of hours or so these aeroplanes would regain their sheds, and it would be known that they themselves were coming on. But steadily they plodded on, dragging their pontoons. They made, indeed, some wonderfully meticulous arrangements to deal with our aeroplanes. On one occasion an airman, flying in his habitual route (for till the day before their actual attack our airmen almost convoyed the Turkish troops like policemen), found waiting for him a little assorted park of artillery. There were four guns of varying calibre, evidently waiting for his appearance, for without any bustle all four were successively discharged at him at their varying ranges. It was evidently a sort of pre-arranged test, and though he escaped the shooting was good. And not only did these four let fly at him. As he still hovered, two others, each harnessed to ten horses and ready limbered, dashed headlong to the summit of a small hill and were quickly in action against him. These methods point to the existence of German forethought, and are a vast difference from the haphazard and incompetent valour of the Turk when left to himself.

"There is no doubt that, for all his determination, our aeroplanes (in which are included the waterplanes) harassed the enemy considerably. If we only had some here as powerful as those in use in France, having their radius of action, Beersheba and the other Syrian bases would long ere this have received their P.P.C. bombs like Cuxhaven, Zeebrugge, and the other training-grounds put at the disposition of our airmen by the German Government. As it is, there have been some exploits here which it would be unjust to let pass unmentioned. One of our airmen scored a bull's-eye with a bomb from a height of 7,000 ft., and destroyed a full score of the enemy marching in close order, at the lowest counting. . . .

"The enemy have for the present retired far out of the reach of our aeroplanes. Whether they will come back or not is a question everyone puts in Egypt."

The Sluis correspondent of the *Tyd* reported the following on the 23rd ult. :—

"One evening recently, German aviators ascended from the aviation camp between Thourout and Ostend, but the British aviators were waiting for them. One British pilot succeeded in getting above the German aeroplanes, and shot down two German machines. A third aeroplane was badly damaged. Altogether seven German officers were killed."

According to a correspondent of the *Maasbode* at Zeebrugge, writing on the 24th ult., an aviator dropped a bomb on some cars of the electric tramway from Knocke to Ostend. Thirty German soldiers were killed and fifty wounded. The airman was heavily fired at, but escaped.

The following message, dated St. Pol, February 24th, was received in Paris :—

"Yesterday a German aeroplane which flew over our lines was brought down by one of our shells at Noeux. The pilot was taken prisoner. This morning, at about seven a.m., our aeroplanes, taking advantage of the clear weather, flew over the German lines in the La Bassée district, and succeeded in locating six enemy batteries, which a few minutes later were shelled by our heavy artillery. At the same time snow began to fall in large flakes."

A Reuter message from Garub (German South-West Africa), dated February 24th, said :—

"An enemy aeroplane appeared over the camp to-day and dropped several hand grenades or dart bombs and four shells. None of the grenades did any damage, but three shells burst in the hospital lines, one in the very door of an operating tent itself, while a fourth burst among a knot of men, wounding one officer and five men, none of whom have yet been officially classed as dangerously wounded."

The Mitylene correspondent of the *Corriere d'Italia*, writing on the 25th, regarding the Dardanelles operations, said :—

"The Allied Fleet of twelve cruisers and twenty destroyers yesterday renewed, at half-past nine, the bombardment of the Dardanelles. Before firing began three hydroplanes flew a thousand mètres above the forts, and dropped bombs, which caused fires. After three hours' bombardment great fires occurred in the defences, which were almost destroyed."

A correspondent of the *Matin* at Nancy on the 26th reported having received word from Baccarat that a German aeroplane, which was flying over the Luneville district on the 25th, was brought down by French artillery. The aviators, who were obliged to alight hurriedly, were made prisoners.

The Athens correspondent of the *Messaggero* stated that on the 26th ult., British aviators made extended flights over the Dardanelles, and were able to ascertain that the fort of Seddul-Bahr had been destroyed by the blowing-up of the powder magazines; while the forts of Ertogrul and Sultanieh had been almost destroyed, no gun remaining fit for service.

The *Morning Post* correspondent at Petrograd in a message dated February 26th, dealing with recent operations in Eastern Galicia and on the Niemen front, said :—

"At several points the Russians, after hard fighting, defeated the Germans, who retreated, although aviators' reports proved that they had not touched the reserves behind them."

According to a message received in Paris from Rome on Saturday, one of the two airships stationed at Pola, while making a cruise over the Adriatic, was carried away by a violent storm and the crew drowned.

In the "wireless" news sent out from Berlin on Monday afternoon there was the following :—

"In the western theatre of the war, near Verviers, north of Lille, an English flying machine was forced to descend by our fire."

Writing from the North of France on Monday last, a correspondent of the *Daily Chronicle* said :—

"On Friday afternoon four German aeroplanes flew over La Panne. La Panne is a small bathing-place on the sea coast. The German airmen threw several bombs, all of which fell into the part of the town that is farthest from the sea, towards the Furnes and Adinkerke roads. One bomb carried away the cornice of a villa, burst and killed a nurse and a little boy that she was carrying in her arms. A military tailor was also killed.

"The enemy aeroplanes did their best to disperse a Belgian column that was marching along the Adinkerke road, but as they kept very high up in the air, in order to avoid the shells that were being fired at them, the bombs were badly aimed and fell far from their target. The Belgian infantrymen were allowed to break column and take shelter for a few minutes.

"Returning over La Panne the airmen did still more damage, and claimed further victims, in particular the wife of a doctor. Afterwards the air squadron made off over Bray-dunes, but there they found themselves face to face with British and French aeroplanes, and they immediately swerved off. When the German airmen had hurled all their bombs they proceeded to throw down the iron rings to which the bombs were attached.

"At Dunkirk a proposal has been made for establishing a money prize for sharpshooters who bring down German aeroplanes. A newspaper of that town has taken the initiative in the matter."

Writing on March 2nd, the Petrograd correspondent of the *Morning Post* said :—

"An interesting detail of the masterly retirement of the Twenty-ninth Division under General Bulgakoff when surrounded by the German armies is supplied by the *Bourse Gazette*. It seems that the two regiments of this division which broke through the cordon of Germans were materially aided by Russian aviators, who continued dropping letters with valuable information, and when ammunition began to fail actually brought a considerable quantity from the distant rear. The zinc-lined boxes of rifle cartridges were enveloped in bales of rags and dropped within reach of the retreating regiments."

Reports were received at The Hague on Tuesday stating that one of the two Zeppelins which were on patrol duty over Cologne to protect the military bridges across the Rhine was blown down by a storm two days ago. The crew were saved, but the airship was damaged beyond repair.

Models

Edited by V. E. JOHNSON, M.A.

Professor Langley's Model Work.

(*Continued from page* 152.)

"IT had been shown in the 'Experiments in Aerodynamics' that the centre of pressure on an inclined plane, when advancing, was not at the centre of the plane, but considerably in front of it, and this knowledge was at first nearly all that I possessed to assist me in balancing these early models. Even in the beginning I encountered the greatest difficulty in throwing them into the air [*i.e.*, in launching them]. I therefore devised numerous forms of launching apparatus which were all failures, and it was necessary to keep the construction on a scale small enough to be launched by hand.

"The earliest flights with these models were extremely irregular and brief, lasting only from 3 to 4 secs. They were made at Allegheny in March, 1891, but these and subsequent ones as well were so erratic and short in their flight that it was possible to learn very little from them. Penaud states that he once obtained a flight of 13 secs. I never obtained so much as this, generally but little more than half as much, and came to the conclusion that in order to learn the art of mechanical flight it was necessary to have a model which would keep in the air for, at any rate, a longer period than these and move more steadily. Rubber twisted in the way that Penaud used it will practically give about 300 foot-pounds to a pound weight [This statement shows how ineffectively Professor Langley was able at that time to make or use this form of motor], and at least as much must be allowed for the weight of the frame on which the rubber is strained. Twenty pounds of rubber and frame, then, would give 3,000 ft.-lbs., or 1 h.p. for less than 6 secs. A steam engine having apparatus for condensing the steam, weighing in all 10 lbs. and carrying 10 lbs. of fuel, would possess in this fuel, supposing that but $\frac{1}{10}$th of its theoretical capacity is utilised, many thousand times the power of an equal weight of rubber [We now know, of course, that the number of ft.-lbs. in a pound of rubber is very much higher than that given above, as a matter of fact about 3,500 ft.-lbs. for lubricated and 1,900 ft.-lbs. for unlubricated rubber* but the comparison still holds in the main, for all that], or at least 1 h.p. for several hours.

"Provided the steam could be condensed and the water reused, then the advantage of the steam over the spring or rubber motor is enormous, even in a model constructed only for the purpose of study. But the construction of a steam-driven model was too formidable a task to be undertaken lightly, and I examined the capabilities of compressed air, carbonic acid gas [CO_2 motors], of various applications of electricity, both in the form of primary and storage batteries, of hot-air engines, of inertia-motors [such as the energy stored up in a rapidly rotating heavily-rimmed flywheel], of the gas engine, and of still other material. The gas engine promised the best of all in theory, but it was not yet developed in a suitable form. The steam engine, as being an apparently familiar construction, promised best in practice, but in taking it up, I, to my cost, learnt that in the special application to be made of it, little was familiar and everything had to be learnt by experiment. I had myself no previous knowledge of steam engineering, nor any other assistance than the very capable workmen employed. I well remember my difficulties over my first model (No. 0), when everything, not only the engine, but the boilers which were to supply it with steam, the furnaces which were to heat it, the propellers which were to drive it, and the hull which was to hold all these, were all things to be originated, in a construction which, so far as I knew, had never yet been undertaken by anyone.

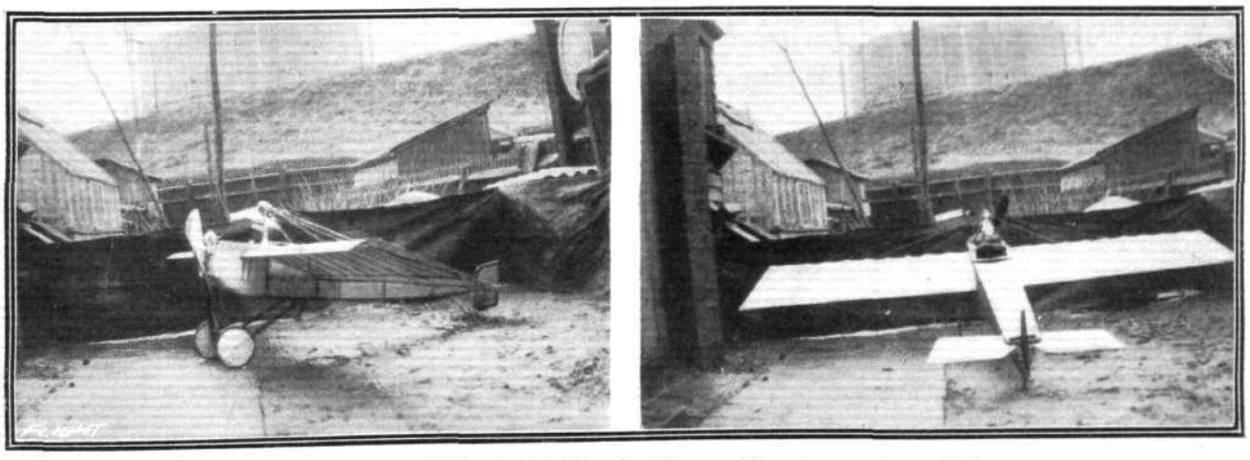
"It was necessary to make a beginning, however, and a compound-engine was planned which, when completed, weighed about 4 lbs., and which would develop rather over 1 h.p. with 60 lbs. of steam [A pressure, be it noted, which we now know is sufficient to fly an *efficient* modern model], which it was expected would be furnished by a series of tubular boilers arranged in 'bee-hive' form, the whole to be contained in a hull about 5 ft. in length and 10 ins. in diameter. This hull was, as in the construction of a ship, to carry all adjuncts. In front of it projected a steel rod, or bowsprit, about its own length, and one still longer behind. The engines rotated two propellers, each about 30 ins. in diameter, which were on the ends of long shafts disposed at an acute angle to each other, and actuated by a single gear driven from the engine. A single pair of large wings of about 50 sq. ft. surface were employed, together with a smaller one of about half as much in the rear, making a total area of sustaining surface of about 75 sq. ft. for a weight which it was expected would not exceed 25 lbs. [*i.e.*, a loading per square foot of between 5 and 6 oz.]. Although this model was in every way a disappointment, its failure taught us a great many useful lessons. It had been built on the large scale described, with but very little knowledge of how it was to be launched into the air, but the construction developed the fact that it was not likely to be launched at all, since there was a constant gain in weight over the estimate at each step, and when the boilers were completed it was found that they gave less than one-half the necessary steam, owing chiefly to the inability to keep up a proper fire. The wings yielded so as to be entirely deformed under a slight pressure of the air, and it was impossible to make them stronger without making them heavier, where the weight was already prohibitory. The engines could not transmit what feeble power they furnished without a dangerous tremor in the long shafts, and there were other difficulties. When the whole approached completion it was found it weighed nearer 50 lbs. than 25, to develop about one-half the estimated horse power at the brake, to be radically weak in construction, owing to the yielding of the hull, and to be, in short, clearly a hopeless case."

(*To be continued.*)

* See FLIGHT, September 28th, 1912.

Mr. W. J. Clark's Morane-Saulnier scale model.

The model shown in the two photographs is a quarter scale model taken from drawings which have appeared in FLIGHT. Span 7 ft. 7·5 ins.; length 5 ft. 4·5 ins.; chord 1 ft. 6 ins. It is driven by a $\frac{1}{2}$ h.p. petrol motor, which has not yet been tested, as our correspondent has up to now been too busy. "A friend and myself," says Mr. Clark, "started the Epsom Aero Club about eight months ago, but as several of our members joined the Colours [We shall be glad to receive their names, &c., for publica-

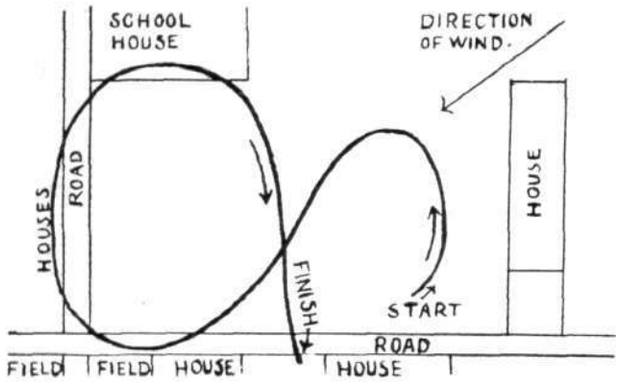


Two views of Mr. W. J. Clark's Morane-Saulnier scale model.

tion], it has weakened us a lot, but we hope to pull it up again when times are brighter, and to be able to send you a few more photos. of the models we are constructing."

Ascham College Aero Club.

"I am sending you," writes Mr. C. S. Mitchell, "a plan of the figure of eight as accomplished by my twin pusher monoplane. None of the members of our club can give a good explanation of this rather remarkable flight; the most satisfactory explanation is the one given by Mr. Mayo. He thinks that the direction



of the machine was altered by its coming near houses where there are probably different currents of air, but we should all like a better explanation than this if there is one to be found." [A figure of eight can arise from several causes; but unless one experimented with the machine on the spot it is impossible to say to what cause some peculiar single or chance flight is due. Why not try and repeat the experiment, noting, as far as possible, every circumstance, and also noting what is the *average* flight, say of a dozen? Atmospherical conditions, such as direction of wind, position of sun, &c., should be the same as when the original flight was made.]

AFFILIATED MODEL CLUBS DIARY AND REPORTS.

Club reports of chief work done will be published monthly for the future. Secretaries' reports, to be included, must reach the Editor on the last Monday in each month.

Aero-Models Assoc. (441, HOLLOWAY ROAD, N.).

As the financial year of the Association closes with the month of March, it is urged that all outstanding subscriptions be forwarded to the secretary immediately. The date of the annual general meeting will be announced in due course.

Paddington and Districts (77, SWINDERBY ROAD, WEMBLEY).

Monthly Report.—During February outdoor flying has been a blank with one exception, namely, by H. R. Weston, who has put a 4-oz. single-tractor hydro. through its paces, the model doing many hand-launched flights of 50 secs. and over. It was impracticable to launch it off the pond owing to muddy surroundings, but this trouble will be obviated in the future by the provision of a plank for approaching the water. Other members have continued busy constructing compressed-air models and engines, also models for scientific research. The club foot-pump with pressure gauge is now available for C.A. models. Members please note they will greatly assist the management by forwarding their subscriptions promptly.

Sheffield Ae.C. (41, CONISTON ROAD, ABBEYDALE, SHEFFIELD).

Monthly Report.—Owing to several of the members serving in His Majesty's Forces, and others employed on Government work, the club's activities have been quiet during the past two months. Jan. 24th, Mr. C. F. W. Cudworth (secretary) and Mr. E. S. Elliott, who have volunteered their services to the Local Association of Boy Scouts, delivered a successful lecture on aeronautics to the Scouts stationed at the camps at Redmires. The lecture was much appreciated by all those present, this being the first of a series. Feb. 16th, Miss Gertrude Bacon gave a most interesting lecture at the Victoria Hall, which included her actual experiences in balloons, airships, aeroplanes, and waterplanes. The lecture was well illustrated with lantern slides, while demonstrations were carried out with flying models of airship, monoplanes, biplanes, and helicopters, &c. There was a splendid attendance, the club being represented by Messrs. C. F. W. Cudworth, E. S. Elliott, W. H. Bagshaw, sen., and R. E. Raynor. Anyone interested, and who wishes to become a member of the club, should communicate with the secretary at the above address. This is the only club within 40 miles of this city that possesses the use of two large private flying grounds. The next general meeting of the club will be announced in a few weeks in FLIGHT. A Roll of Honour list is being drawn up of those serving in His Majesty's Forces, and as soon as completed will be sent for publication in FLIGHT.

Stony Stratford and District Kite and Model Ae.C. (OLD STRATFORD).

MARCH 20TH, March competition.

Monthly Report.—A members' meeting was held on Feb. 3rd, when Mr. H. Mennell introduced the subject of "Early Models," this being a *resumé* and description of the models made for the 1907 *Daily Mail* Prize. The secretary announced the receipt of a special prize from the Star Co., and this was allotted as Special for the best junior performance for three months ending April 30th. It was also announced that specials had been presented for the best duration in the April–June quarter. The following record class was altered from all types hand-launched to Class 1A and B twin-propellers hand-launched. The first number of the club magazine was issued on this evening, and everyone seemed satisfied with the matter submitted. The weather has been too rough for quality flying, hence on the occasion of the February competition on the 20th for r.o.g. all the machines were untried, and the results on the whole were so disappointing that only one prize was allowed.

UNAFFILIATED CLUBS.

Finsbury Park and District (66, ELFORT ROAD, HIGHBURY, N.).

MARCH 6TH, trials for duration records.

Monthly Report.—The past month has been much busier all round than its predecessor, although only on the last two week-ends has flying been possible. Mr. F. E. Rayner has produced the first C.A. model in the club; it is of Morane form and weighs in flying order 16 ozs., loading 7 oz. per sq. ft.; its tests have so far been confined to getting the best out of the engine, which is a two-cylinder rotary. Messrs. A. Richards and B. H. Barnard with r.o.g. tractors have been doing good work, flying well into the forties in bad weather. Messrs. G. Wren, S. C. Barnard, W. Hardinge and H. Mullen (who is evolving another C.A. plant) have also been flying well. Mr. B. H. Barnard has evolved a new type of model, namely, a pusher mono. (on the lines of the N.A.C.'s waterplane), which put up some extremely interesting flights on its first appearance. Other compressed-air machines are in course of construction by various members, and their *débuts* are awaited with interest.

Liverpool Aero Research Club (62, CEDAR GROVE, LIVERPOOL).

Monthly Report.—Taking things all round, the month, despite few occasions when flights have been possible, some good all-round performances have been registered, T. W. Bennett lifting the biplane rise-off-ground club record 5 secs. higher on the 20th. On Jan. 30th, some good sport was witnessed despite low attendance, V. Barrow and F. Lowe being busily engaged experimenting on a "midget," and doing some fine stunt and upside-down flying on a speedy racer. J. Kilshaw also made things lively with a flexible wing r.o.g. canard mono., which made some very graceful landings, and seemed to prefer flying head on to wind, appearing to hover, during which the wing flexing is very marked. The new 4 ft. twin-geared tractor mono. of G. H. Kilshaw made its appearance, though no flights were made, too much vibration while running. The machine was put back to the workshop for alterations. Feb. 6th and 13th, blank days owing to the weather; 20th was an ideal day, there being fine altitude flying by B. Tear and T. W. Bennett (biplanes), the durations rise-off-ground being 25 and 30 secs. respectively, the stability in both cases being excellent, the Bennett biplane executing some extremely fine glides, and landing well. B. Tear also flying arrow-plane canard mono. r.o.g., and only needs minor alterations to show up "some."

Scottish Ae.S. Model Ae.C. (5, DOUNE QUADRANT, GLASGOW).

MARCH 6TH, waterplanes at Maxwell Park Pond, competition for same on latter date. Members will receive intimation of future fixtures.

Monthly Report.—Owing to the weather conditions prevailing this month no flying of any note has taken place. It is, however, notable how much the tractor is in evidence at meetings now, and how covered-in *fuselages* are fast gaining favour. Will members who have not already sent in their donations to the Hon. J. Secy. for the "Flying Services Fund" kindly do so at once?

Southend, Westcliff and Leigh Model Aero Club (96, VALKYRIE ROAD, WESTCLIFF-ON-SEA).

A FLYING meeting is being arranged for Easter Monday, April 5th. Will intending competitors kindly communicate with the hon. sec.? Assistant instructor, E. Woodfield.

Monthly Report.—Members have been very active both in flying and workshop; several new models have made their appearance. New records have been made during this month by E. Prockter, T. Wye flying twin-screw h.l., also tuning up single-screw flying stick.

Aeronautical Patents Published.

Applied for in 1914.

Published February 25th, 1915.

2,711. E. R. CALTHROP. Parachutes.
3,215. G. E. ELIA. Laying connected submarine or floating mines from aircraft.
15,389. VICKERS, LTD., AND H. B. PRATT. Mooring rigid airships.
19,109. C. H. CURTIS. Helmets for aviators.
20,117. J. SLOAN. Vehicle for transporting aeroplanes.

Published March 4th, 1915.

8,862. S. W. HISCOCKS AND S. J. WATERS. Aeroplanes and hydro-aeroplanes
15,631. HENSEL AERO STABILISER CO. Stabilisers.
17,767. A. L. VARCIN. Sights for discharging bombs from aircraft.
22,578. A. D. MACROPOULOS. Aeroplane.

Index and Title Page for Vol. VI.

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